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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,018	07/15/2003	Daniel C. Merkel	H0004175	8618

7590 09/08/2006

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EXAMINER

NGUYEN, NGOC YEN M

ART UNIT PAPER NUMBER

1754

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/620,018	Applicant(s) MERKEL ET AL.	
	Examiner Ngoc-Yen M. Nguyen	Art Unit 1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-8,10-12 and 16-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21 is/are allowed.
- 6) ☒ Claim(s) 1, 4-8, 10-12, 16-20, 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 23, 2006 has been entered.

Claim 21 is allowed.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach or suggest a method for producing anhydrous fluoride by first extracting hydrogen fluoride using a concentrated sulfuric acid and then flash distilling the obtained sulfuric acid/HF mixture to provide a first HF product, adding water to the first HF product to form a dilute HF mixture and distilling the dilute HF mixture to obtain anhydrous hydrogen fluoride.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1, 4-8, 10-12, 16-20, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB '1,052,118, optionally further in view of Swain (5,895,639) and Belter (5,874,658).

GB '118 discloses a process for separating hydrogen fluoride in the production of fluorine-containing halogenated hydrocarbon, the method comprising contacting the gaseous mixture with aqueous sulfuric acid of at least 70% concentration to selectively absorb the hydrogen fluoride (note claim 1). The lower limit of 70% is well within the claimed range.

GB '118 also discloses that the boiling point of the fluorinated product is close to that of hydrogen fluoride (note page 1, lines 36-41). This fairly teaches that the hydrogen fluoride and the fluorine-containing halogenated hydrocarbon is an azeotrope or azeotropic-like mixture.

In the example, a gaseous mixture generated in the production of monochlorodifluoromethane from chloroform and hydrogen fluoride was the starting mixture (note page 2, lines 61-63).

For claims 16-20, since the process of GB '118 has all the positive process limitation as required in the instant claims, the hydrogen fluoride product of the GB '118 would inherently have the same low amount of sulfur and TOC impurities as the product of the claimed process.

For other value other than "70%" for the sulfuric acid concentration, the range of "at least 70%" as disclosed in GB '118 overlaps the claimed ranges. With respect to the encompassing and overlapping ranges previously discussed, the subject matter as a

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whole would have been obvious to one of ordinary skill in the art at the time of invention to select the portion of the prior art's range which is within the range of the applicants' claims because it has been held prima facie case of obviousness to select a value in a known range by optimization for the results. *In re Boesch*, 205 USPQ 215. Additionally, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness. *In re Malagari*, 182 USPQ 549.

Beside the monochlorodifluoromethane as disclosed in the example, GB '118 discloses generically that process can be used to separate HF from "halogenated hydrocarbon" (note claim 1). Thus, it would have been obvious to one of ordinary skill in the art to use the process of GB '118 to separate other halogenated hydrocarbon, other than monochlorodifluoromethane from HF.

GB '118 further teaches that the HF, which is absorbed in the sulfuric acid, is separated and recycled (note page 2, lines 77-81). Without a showing of criticality or unexpected results, it would have been obvious to one skilled in the art to use any known method in the art, such as flash distillation or fractional distillation, to separate the HF from the sulfuric acid in order to recycle both.

Optionally, Swain '639 can be applied as stated below.

Swain '639 discloses a process for separation of hydrogen fluoride from fluorocarbon/HF mixture by sulfuric acid (note claim 1). Swain '639 also teaches that the mixture can be an azeotrope (note column 2, lines 37-38). Swain further discloses

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that HF is separated from the sulfuric acid by distillation (note column 4, lines 13-14).

The separated HF and sulfuric acid can be recycled (note column 3, lines 23-27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to separate the HF from the sulfuric acid in the process of GB '118, as suggested by Swain '639 because by doing so the HF and sulfuric acid can be recycled.

Belter '658 can be applied to teach that it is conventional in the art to form chlorofluorocarbons, hydrofluorocarbons and hydrochlorofluorocarbons by reacting hydrogen fluoride with a suitable chlorocarbon or hydrochlorocarbon (note column 1, lines 13-17). The HF used and recovered in Belter '658 is anhydrous HF (note column 3, lines 1-3).

Since the HF acid used in Belter '658 is anhydrous hydrogen fluoride (note column 3, lines 2-3), It would also have been obvious to one skilled in the art to optimize the distillation process in GB '118 to obtain anhydrous HF. The Examiner takes Official notice that flash distilling and the step of distilling a diluted HF to obtain anhydrous hydrogen fluoride are known and conventional steps in the art.

Applicant's arguments filed August 23, 2006 have been fully considered but they are not persuasive.

The 102 rejection over GB '118 is withdrawn in view of Applicants' amendment to the claims.

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Applicants argue that anhydrous hydrogen fluoride having very low sulfur content can be achieved by subjecting an extract HF/dilute sulfuric acid mixture to combination of flashing and column fractionation.

This unexpected result or criticality is only for when a concentrated sulfuric acid is used (note Applicants' specification, pages 11-12, under "Concentrated Acid Methods". For the method using dilute sulfuric acid, it is disclosed that any method of distillation may be used (note Applicants' specification, page 10, lines 15-17). No criticality or unexpected result is shown on record for the method using dilute sulfuric acid as alleged by Applicants.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on Part time schedule.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Stanley Silverman can be reached on (571) 272-1358. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 or (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed (571) 272-1700.

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Ngoc-Yen M. Nguyen
Primary Examiner
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nmn

September 5, 2006